DOCUMENT RESUME

ED 164 683 UD 018 937

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TITLE A Further Investigation of the Effects of Integration and Special Educational Intervention in the Early Primary Grades (1).
SPONS AGENCY Ford Foundation, New York, N.Y.; Hebrew Univ. of Jerusalem (Israel).
PUB DATE [78]
NOTE 25p.

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Academic Achievement; Achievement Tests; *Classroom Integration; *Compensatory Education Programs; *Disadvantaged Youth; Economically Disadvantaged; *Integration Effects; Lower Class; Mathematics; Middle Class; Primary Education; Reading Achievement
IDENTIFIERS *Israel

ABSTRACT

A longitudinal study reported in this document examines the effects of integration and the implementation of an open-classroom type program on first and second grade children from lower and middle class Israeli backgrounds. Data used to support the findings presented were obtained from the results of mathematics and reading achievement tests administered to both experimental and control groups at the end of two school years. Findings presented indicate that: (1) lower class children in settings that combine integration and classroom innovation achieved significantly better at both grade levels, as compared to their peers in integrated settings without changes in classroom procedures; (2) lower class children in homogeneous settings performed significantly below both of the latter groups; and (3) the performance of middle class children was essentially unaffected by integration. Implications for further research and policy are discussed and a list of references and tables showing statistical data gathered are included. (Author/EB)

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A FURTHER INVESTIGATION OF THE EFFECTS OF INTEGRATION AND SPECIAL EDUCATIONAL INTERVENTION IN THE EARLY PRIMARY GRADES(1)

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ABSTRACT

The research reported on is part of a longitudinal study of the effects of integration and a particular innovation in classroom practice on the achievement of lower and middle class children in elementary school. Two successive waves of first and second grade Jerusalem children in both experimental and control schools were administered mathematics and reading achievement tests at the end of two school years. The current study essentially replicates the results of a study of the first wave (Klein and Eshel, 1972).

Lower class children in settings that combine integration and classroom innovation achieved significantly better at both grade levels, as compared to their peers in integrated settings without changes in classroom procedure. Lower class children in homogenous settings performed significantly lower than both of the latter groups. The performance of middle class children was essentially uneffected by integration. Implications for further research and policy are discussed.

As often pictured in the literature, the disadvantaged child is a typical product of disorganized surroundings - an environment that either deprives him of linguistic and intellectual stimuli, or so overstimulates him that he perceives himself in a world without order or control. Accordingly, it is the impoverished environment that is the major cause for limitation of abilities in language, thinking, and conceptualization, all of which contribute to the child's inability to deal with the cognitive and social demands of formal education. The almost guaranteed failure of the disadvantaged child in school then leads to a negative self-image and a vicious circle of defeat and lack of motivation in intellectual pursuits (Klaus & Gray, 1968; Bernstein, 1961)

It is this theory, or some variation of it, that provides a base for most compensatory education programs. Simply put, the educational implications involve planning interventions aimed at remedying basic intellectual deficits as a prerequisite for all further learning and development. Other investigators, however, have chosen to form their conclusions on the basis of empirical findings rather than theoretically derived hypotheses. Coleman, (1966) for example, found that disadvantaged children who learn in classrooms with a majority of middle-class student population manage a respectable level of achievement even without any special compensatory type of intervention. This achievement, furthermore, is not specifically related to a great many factors - such as facilities, money spent, different types of teaching techniques, etc. - that are generally taken to be important for educational outcome. This finding has been re-affirmed in other studies, i.e., however modest the contribution of integration as a factor in raising

the achievement levels of disadvantaged children outweighs almost all other factors that may be brought to bear on changing the educational situation (Jencks, 1972)

In spite of its political and social importance, the subject of integration has not been examined in depth. A relatively small number of studies, carried out on very large cross-sectional populations, have been used by most investigators and discussants. (Mosteller & Moynihan, 1972). This data in turn, has been subjected to interpretations and secondary analyses which emphasize one aspect or another of the subject. The lack of in-depth investigation of the issue of integration immediately raises at least two major problems. One is the complexity of the concept itself. Integration is at one and the same time a political and social ideal referring to the way a society, or some part of it, would like to conceive of itself, and a method by which the intellectual and social behavior of disadvantaged children can perhaps be modified. The co-existence of these two frames of references in a single action system raises many problems both for administrators and researchers as they attempt to reach some understanding and clarity about guidelines for investigation and application.

The second problematic area is in the details of the integration process itself. St. John (1970) has detailed these difficulties: the problem of finding a representative sample; the lack of appropriate controls; the need for longitudinal as opposed to one-time cross-sectional studies; insufficient attention to subject background variables; and the difficulty in comparing different sets of research

findings. Many of these problems stem from the fact that only rarely does the researcher participate actively in the design of an integration program. Usually he must adapt himself, his instruments and his analyses to existing social and political dimensions of ongoing programs. Unfortunately, most of these limitations on the data are forgotten when the results of studies are used to justify one or another ideological stand.

The program under consideration in this study involves a "natural experiment" which, as will be detailed later on, begins to answer some of the issues raised by St. John. The integration project studied also included a special type of educational intervention designed to facilitate the learning and development of all children in the program. Interestingly, very little research has been done on the effects of different educational approaches within integrated settings. As a result, existing studies offer little alternative to interpretations centering on integration alone as the major variable accounting for changes in performance. This places a very great theoretical strain on integration as an explanatory concept, while intimating that there is little differential effectiveness among various educational approaches. The significance of the present study lies in the opportunity to examine simultaneously the influence of integration and a special educational approach on the performance of pupils.

There are also additional features of the present study that are important. It has become almost axiomatic among writers on integration to suggest that 1) a basic requirement for successful program implementation is beginning the program as early as possible in the

school life of the children, and, 2) the more years a child spends in an integrated setting, the greater the facilitative effect (Jencks, 1962). Very few studies, however, have actually examined the effects of integration at the earliest grade levels. The present investigation, focusing as it does on children in the first and second grades, may help remedy this gap in information. Moreover, two successive waves of 1st and 2nd graders were studied, thus helping to meet a general criticism of intervention programs, namely the lack of information about replication and stability of effects.

Finally, the study reported here is part of a longitudinal investigation that follows children entering in the 1st grade through six years of elementary school. In future publications, we hope to be able to deal with many of the important problems that a longitudinal as opposed to a cross-section approach, can alone highlight.

An initial study of the project reported on in this paper, (Klein & Eshel, 1972) indicated the following:

1) Lower-class children who are integrated into heterogeneous classrooms with a majority of middle-calss children (in schools of high academic standing) at the end of 1st and 2nd grade, achieve at a significantly higher level than similar lower-class children in homogeneous lower-class classrooms.

2) The effect of a special educational intervention was most pronounced at the end of the 2nd grade. Lower-class children in integrated classrooms utilizing the special program were quite similar to their middle-class peers in achievement. Lower-class children in integrated classrooms with no special intervention performed at a lower

level.

3) The achievement of middle-class children in integrated classrooms was not negatively affected (in comparison to national test norms.)

While these initial findings appeared quite promising, a major question remained as to whether or not such outcomes could be replicated and effects maintained over time. In the long history of educational interventions, there are too many examples of both the failure to replicate and the failure of replications. The present study is an attempt to overcome such shortcomings and to investigate more specifically both the stability and the components of effects previously arrived at.

PROCEDURE

The integration program reported on in the present study was not designed originally as a vehicle for empirical investigation. The program arose in response to a particular set of educational and socio-political conditions with little regard for the requirements of experimental rigour. Yet, as carried out, the program offered an interesting natural experiment in which, 1) self-selection of parents in participating schools did not at all apply; 2) the project included both schools with homogenous lower class populations and schools with integrated classrooms, in which the proportion of middle class to lower class children was designated at sixty percent to forty percent; and 3) control schools were found that were similar to project schools, on a number of criteria to be detailed below.

The program began with the first grade, with successive classes added each year, while children in the unintegrated upper classes continued to graduate.

First grade classes in all experimental schools were organized in the form of "Kitot Pa'altaniyot", as they are known in Israel. Loosely translated, this means "activity-oriented classes". Physically, these are similar to the infant school arrangement in England, or variations of the "open classroom" in the United States. Children sit and work in small groups; there is a fair amount of freedom of movement; and direct frontal teaching is held to a minimum. The emphasis is on maximum provision for the self-directed activity of the learner, the encouragement of spontaneous interest, curricular implementation of

theoretical ideas about the course of the child's cognitive and emotional development, and greater opportunity for individual teacher-pupil contact and planning. Additionally, a second teacher was assigned to all project classrooms for a number of hours per week so as to extend individualized contact with pupils. This particular form of intervention was chosen for the project since it was thought to be an excellent way of providing for the educational needs of two groups of children varying as much as two standard deviations on ability tests within a given classroom.

At the completion of the first year of the project, all second grade classrooms were organized along the same lines, while the integration plan was continued with the new first graders. The present study was carried out in the Spring of 1972, when the project had been under way for three years.

For the purpose of the study, all children were designated as either lower class (LC) or middle class (MC). In terms of Israel, this division was made along lines of, (a) parent education (LC not exceeding elementary school) and (b) cultural background, i.e., most children whose pattern of school achievement and behavior is termed culturally deprived stem from families whose country of origin is "Oriental" (Arabic-speaking countries of North Africa and the Middle East), while the MC are from families of predominantly European-Israeli origin. This designation was made easier by the fact that all lower class children in project schools came from a relatively homogeneous neighbourhood where there were a few variations in either cultural background or socio-economic status.

School records were used to make the socio-economic status determination whenever the data on parent education was incomplete.

The final study sample was comprised of the following four groups of schools.

1) Two integrated schools of high academic standing with "activity" classrooms whose students before integration were predominantly of Israeli-European origin;

2) Control schools of high academic standing, integrated as above, without "activity" classrooms;

3) Two schools of low academic standing, with a homogeneous lower class pupil population, and "activity" classrooms.

4) Two schools of high academic standing, with a homogeneous middle class pupil population, without "activity" classrooms.

The two control schools were similar to the two project schools on the following dimensions: percentage of LC children in the classroom; socio-economic status of parents; academic level; school reputation in the community and religious - non-religious classification of the school. LC children in the homogeneous project schools were found to be similar in all respect to LC children entering the integrated schools (occasionally coming from the same neighbourhood). MC children in the fourth group were similar to MC students in the four integrated schools in socioeconomic and occupational status of parents.

Children in the study were classified into the following group:

1) Middle class children in integrated classes with special intervention (MIP)

2) Middle class children in integrated classes without special intervention (MI).

3) Middle class children in homogeneous classrooms without special intervention (M)

4) Lower class children in integrated classes with special intervention (LIP).

5) Lower class children in integrated classes without special intervention (LI).

6) Lower class children in homogeneous classrooms with special intervention (LP).

A summary of the sample examined in the study is in Table 1.

Insert Table 1 about here

All children in the sample were tested with the following instruments during the last month of the school year;

Mathematics Achievement Test. This test, developed by Professor A. Minkowich of the Hebrew University's School of Education, is a test of achievement in first grade mathematics. It was developed particularly for assessing achievement after instruction in the "new math", a version of which is now taught in all Israeli elementary schools. The test contains items centering both on arithmetic skills and the more abstract basic mathematical operations.

Reading Comprehension Tests. Developed by Dr. Gina Ortar of the Hebrew University's School of Education, these are tests of basic reading skills and comprehension (Hebrew) for first and second grades. The scoring for these tests, as with the previous one, can be weighted differentially for culturally deprived and MC children. In both the scoring and the data analysis, the MC norms were used so as to provide a common basis for comparison among the various groups. All the tests were group administered during regular classroom time.

RESULTS

Mathematics achievement of LC children

The effects of type of school and grade level on mathematics achievement were examined separately for LC and MC children. Fig. 1 presents the mean achievement scores of LC children in three types of schools:

Insert figure 1 about here

The data in Fig. 1 confirm and refine the findings of the previous study (Klein & Eshel 1972). In both the first and second grades, the order of achievement scores is LIP > LI > LP. A two-way analysis of variance indicates that the effects of type of school, grade level, and the interaction between them are significant ($p > .001$). The interaction effect refers to the increasing gaps in achievement among students in the three types of schools at the second grade level. LC children in homogenous schools evidently do not progress as well as children of similar backgrounds in integrated settings. The significant grade level effect, on the other hand, is probably due to the fact that the test used was not a standardized instrument.

Insert Table 2 about here

Mathematics achievement of MC children

As stated before, an important question about the performance of MC children is whether or not their achievement is adversely effected by the process of integration. An examination of the mean achievement scores of MC children in the three types of schools represented in the

study failed to reveal any major differences between M and MIP children, while the achievement of MI children is somewhat lower than both the others (Fig 2) (Table 3). Table 3 further shows that the rate of progress in mathematics is not significantly different among the three groups. On the other hand, a further examination of the data indicates that the mean scores of MI and LIP children in both grades 1 and 2 are quite similar. This strengthens the contention that the combined efforts of integration and special intervention can contribute to the improved performance of lower class children so as to nearly approximate that of their middle class peers.

Insert Fig. 2 about here

The data in Figure 2 also support the finding of the earlier study (Klein & Eshel, 1972) that the activity classroom intervention can positively effect the achievement level of MC children. This calls into question the assumption that MC children are already performing at some optimal level in the regular school setting.

Insert Table 3 about here

Reading Achievement

The reading comprehension test used in this study - the only one currently available in Israel - was developed originally as a practical aid to teachers in detecting reading difficulties. However, beyond an optimal level of reading ability presumably within the reach of most children, the test does not clearly discriminate. This minimizes the discriminatory power of the test beyond the prescribed norm of average

achievement.

On the other hand, the number of children in the present sample who were not reading at some minimally competent level at the end of first grade was almost negligible. In terms of the data, this means that almost all children in the study appear to be reading at or above the norm set by the test for MC children. Given these conditions, only very large differences among the various sub-groups might have some educational significance. Such large differences were noted, as might be expected, between (a) MC and LC children, and, (b) LC children in integrated classrooms and LC children in homogeneous classrooms. While these findings suggest a positive impact of integration on LC reading achievement, the fact that almost all interactions among grade level, activity program, and integration were significant, makes any clear interpretation highly problemmatic.

DISCUSSION

The following discussion will relate to three issues: (1) the performance of middle class children in integrated classrooms; (2) the significance of integrated settings for the performance of LC children; and (3) the contribution of special intervention programs in the context of integrated classrooms. Although these issues by no means exhaust the questions that can be asked of the data and the project, they represent problems of central interest to both researchers and policy-makers, and, as such, are assigned priority. Where relevant, information gained from interviews and observations is included in the discussion.

The MC children in integrated classrooms. The role of MC children in research pertaining to the disadvantaged and integration has been primarily that of a comparison group, either to highlight differences or demonstrate the closing of "gaps" in various aspects of performance. In the political and community spheres, however, much more acute questions are often asked about the educational fate of the MC child himself: do integrated classrooms set limits on his achievement, and how does he respond to intervention techniques aimed at a different ability population? While the results of the present study cannot supply unequivocal answers to these questions, they do shed some interesting light on them.

All MC children in the study attended classrooms that were integrated in approximately the same way, i.e. contained between thirty to forty percent of LC children. The schools in which these MC children

studied are also noted as being the "best" in the city on the basis of criteria mentioned before. The achievement levels obtained in the study reflect how MC children perform when provided with the optimal settings available in the present school system. (The latter is particularly evident in the high levels of reading achievement in both first and second grades, both for project and comparison group MC children.)

There are very small overall differences among the three groups of MC children on the mathematics test. The largest mean difference is in the second grade between MIP and MI children - a total of some four points, which is of questionable educational significance. For this reason, there seems to be little value in examining what part of this difference is contributed by the variables of integration and/or activity classrooms for the MC population during the first two years of school. One may conclude, however, that the situation represented by integration in this study seems to have little deleterious effect on the performance of MC children. Only a longitudinal study (such as is now under way) , can show if whatever differences are suggested will continue in later grades.

Lower Class children in integrated settings. Figure 1 indicates that a consistent order is maintained among the three types of schools examined in this study. As expected, LC children performed at the highest level of mathematics achievement in integrated classrooms provided with the special intervention, at a somewhat lower level in integrated

classrooms without the special intervention, and do most poorly in homogeneous classroom settings. Furthermore, the gaps among these three groups increase significantly in the second, as compared to the first grade. This finding replicates that of an earlier study (Klein & Eshel,1972) carried out with many of the same children one year earlier.

The data strongly suggest that integration does have a significant impact on the achievement of LC children, while the activity classroom seems to be differentially effective, depending on classroom social setting. This sheds some further light on the conditions by which specific educational interventions for the disadvantaged might be expected to have an effect. Integration as a structural change in the school setting may represent or overlap with some set of minimal conditions that need to be satisfied in order for a more specific intervention to have an impact on LC children. The nature of this interaction, however, remains unclear and no one has as yet offered a satisfactory explanation or model of what actually takes place in an integrated setting (St. John, 1975)

The LC children were attending schools where the press for achievement was high, where teaching was possibly better (or, at least in the project schools, accompanied by much enthusiasm and initiative at being part of a new program), and where the status inherent in attending such schools may have had important effects on the child's self-image and family attitudes.

Thus, the meaning of the term "integration" in this study can be understood only in light of the conditions under which it took

place. The findings of the study do not lend support for any mechanical application of integration formulae that do not take the suggested conditions into account. Nor do the findings of necessity rule out the efficacy of homogeneous settings, at least in terms of achievement. All LC homogeneous settings in the study were schools of low academic standing, teacher morale, expectations, and social status. Even though we cannot as yet clearly specify the identity and impact of the various school inputs involved, the findings indicate that school characteristics are not to be entirely discounted in assessing the performance of the disadvantaged child, contrary to some of the interpretations made of the results of the Coleman report (Grant, 1972).

The special intervention in the project schools. Most of the teachers in the project were very enthusiastic about it, particularly as it represented a radical departure from traditional classroom operations. In spite of the fact that the program was set up hurriedly, and there was insufficient supervision and direction, the teachers invested much time and energy in developing new materials and techniques, often, according to the observers, creating a spontaneous and warm atmosphere generally not found elsewhere in the school system. Although there were major variations in the implementation of the program among the schools and classrooms, all the teachers made attempts to allow for greater individualization, spontaneity and provision for the child's self-directed learning activity.

Observations and interviews, however, indicate some of the difficulties in implementing such programs. Even though the program afforded more time and opportunity to focus on the particular needs of each child, many teachers

admitted to not knowing how best to exploit this time more adequately for the LC child. In the integrated project classrooms, working with the MC child proved to be no special problem, but the changed context of work with the LC child did. Some teachers did make some highly creative attempts to adapt the techniques of the special intervention to the pace and style of the LC child. Others, however, tended to revert to more traditional, drill-oriented methods with slower pupils, or accept their passive presence in activities carried out predominantly by MC children, or incease the sheer amount of activities in the classroom without a clear idea of how to organize them for maximal educational benefit.

The observations suggest that a major component of the impact the special program had, was the presence of more than one teacher in the class, thus extending the opportunity for teacher-pupil contact. It remains to be seen if the program can have the same impact with the regular allocation of teaching manpower. Certainly, much more extensive planning, preparation and ongoing supervision is necessary for testing the full effectiveness of such programs.

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TABLE 1

Number of students in various types of classroom settings.

		MIP	MI	M	LIP	LI	LP	TOTAL
First Study	First Grade	119	52	-	73	47	121	412
	Second Grade	109	66	-	59	37	55	326
Present Study	First Grade	138	93	188	67	51	92	629
	Second Grade	114	23	190	60	32	95	514
TOTAL		480	234	378	259	167	363	1881

TABLE 2

Analysis of variance of mathematics achievement scores for LC children.

Source	SS	DF	MS	F	P
A. (Type of School)	7.57	2	3.78	24.59	.001
B. (Grade	3.33	1	3.33	21.64	.001
AB.	2.25	2	1.13	7.32	.001
Error (within cell)	53.39	347	.15	-	-

TABLE 3

ANALYSIS OF VARIANCE OF MATHEMATICS ACHIEVEMENT SCORES FOR MC CHILDREN

Source	SS	DF	MS	F	P
A (Type of School)	3.34	2	1.67	14.92	.001
B. (Grade)	30.59	1	30.59	273.67	.001
AB	.56	2	.28	2.49	.083
Error (within cell)	81.93	733	.11	-	-

(1) ACKNOWLEDGEMENTS

The authors wish to thank Ms. Ariela Brikner and Ms Raheli Persitz for their devoted assistance in gathering and analysing the data presented in this study.

This study was supported by the Institute for the Study of Educational Innovation, School of Education, Hebrew University of Jersualem; Ford Foundation, grant no., 8-2/7-1973 and the Israeli Ministry of Education.